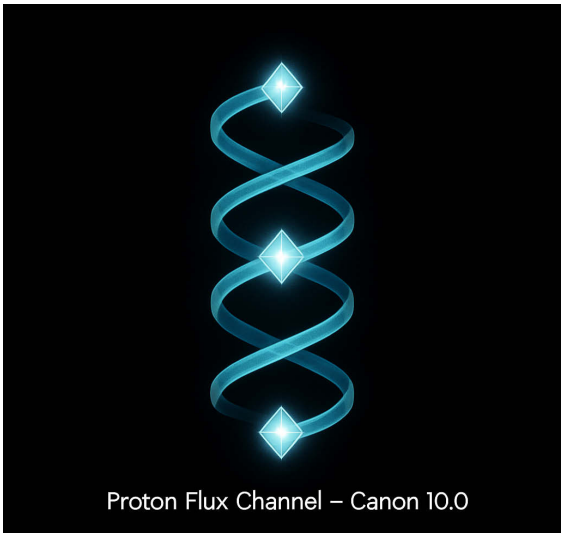

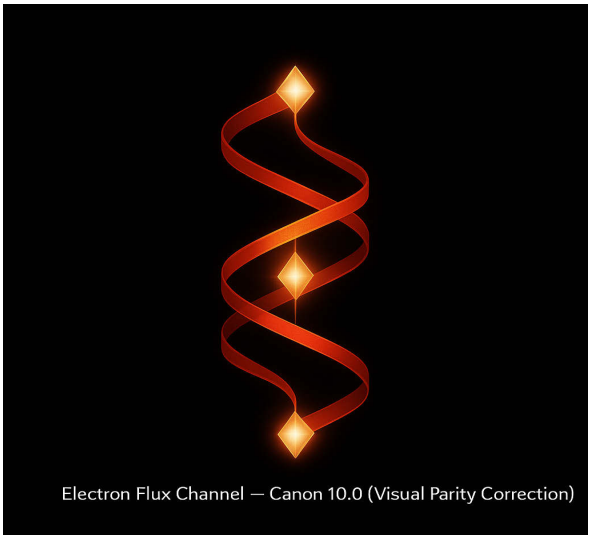

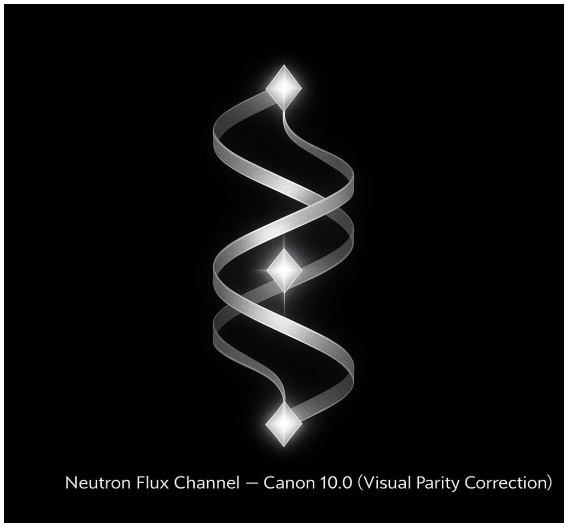

Potentum Field Formalism and the Nature of Quarks

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Abstract

This white paper formalizes the Senson as a bidirectional field excitation within Potentum Physics. The Senson unites introfluxion (Φ^-) and extrofluxion (Φ^+) as conjugate modes of a conserved reciprofluxive scalar Ξ. These dual flux channels —Proton, Neutron, and Electron—arise as distinct boundary conditions of the field, maintaining equilibrium across time. The formulation provides a quantitative basis for the conservation of potentum and geometric coherence underlying atomic spectra, field induction, and coherence phenomena.

1 · Field Postulate

Let the Potentum field $\Xi(x, t)$ be a continuous reciprofluxive scalar satisfying the conservation law: $\partial/\partial t\ |\Phi|^2 = 0$, where $\Phi = \Phi^- + \Phi^+$ represents the superposition of introfluxion and extrofluxion components.
Φ^- denotes inward phase gathering (introfluxion), associated with charge density and mass coherence. Φ^+ denotes outward phase dispersion (extrofluxion), associated with radiation and energy release. Their conjugation defines the stationary equilibrium of the Senson field, ensuring that energy and phase information remain conserved.

2 · Flux Channels

Three canonical flux channels emerge as stable field solutions, distinguished by helicity, phase parity, and potential boundary: • Proton Channel (Introfluxion): right-handed helicity, positive boundary potential; convergent flux.
• Neutron Channel (Equilibrium): phase-opposed coupling; null net flux.
• Electron Channel (Extrofluxion): left-handed helicity, negative boundary potential; divergent flux.

3 · Reciprocity Operator Algebra

Define the reciprofluxion operator $\square$ acting on Ξ such that: $\square\Xi = (\nabla \times \Phi^+) \cdot (\nabla \times \Phi^-) =$ constant. $\square$ measures the mutual inductive coupling between conjugate fluxes, analogous to helicity conservation in gauge theory. Commutation relations follow: $[\Phi^+, \Phi^-] = i\hbar_{e}ff$, where $\hbar_{e}ff$ represents the effective Planck constant for reciprofluxive phase exchange.

4 · Geometric Quantization

Stable eigenmodes of Ξ correspond to harmonic enclosures defined by Platonic symmetry groups. Each geometry represents a quantized flux lattice in which introfluxion and extrofluxion paths form closed reciprofluxive chords. • Tetrahedral mode — minimal closure, single eigenrotation.
• Octahedral mode — dual flux bifurcation, foundation of polarity.
• Cubic mode — orthogonal reciprocity, spectral quantization.
• Icosahedral mode — manifold of harmonic diversity.
• Dodecahedral mode — volumetric reciprocity, full closure of Ξ.

5 · Conclusions

The Potentum Field Formalism of the Senson establishes a unified physics of conjugate fluxes—introfluxion and extrofluxion—whose equilibrium defines the observable universe. Proton, Neutron, and Electron channels represent distinct geometric constraints of reciprofluxive law. Their mutual coherence, governed by $\square\Xi =$ constant, forms the basis of quantized energy, matter stability, and spectral geometry. The Senson thus stands as both particle and field, phase and potential, encoding the symmetry of One Being Many.

6 · References

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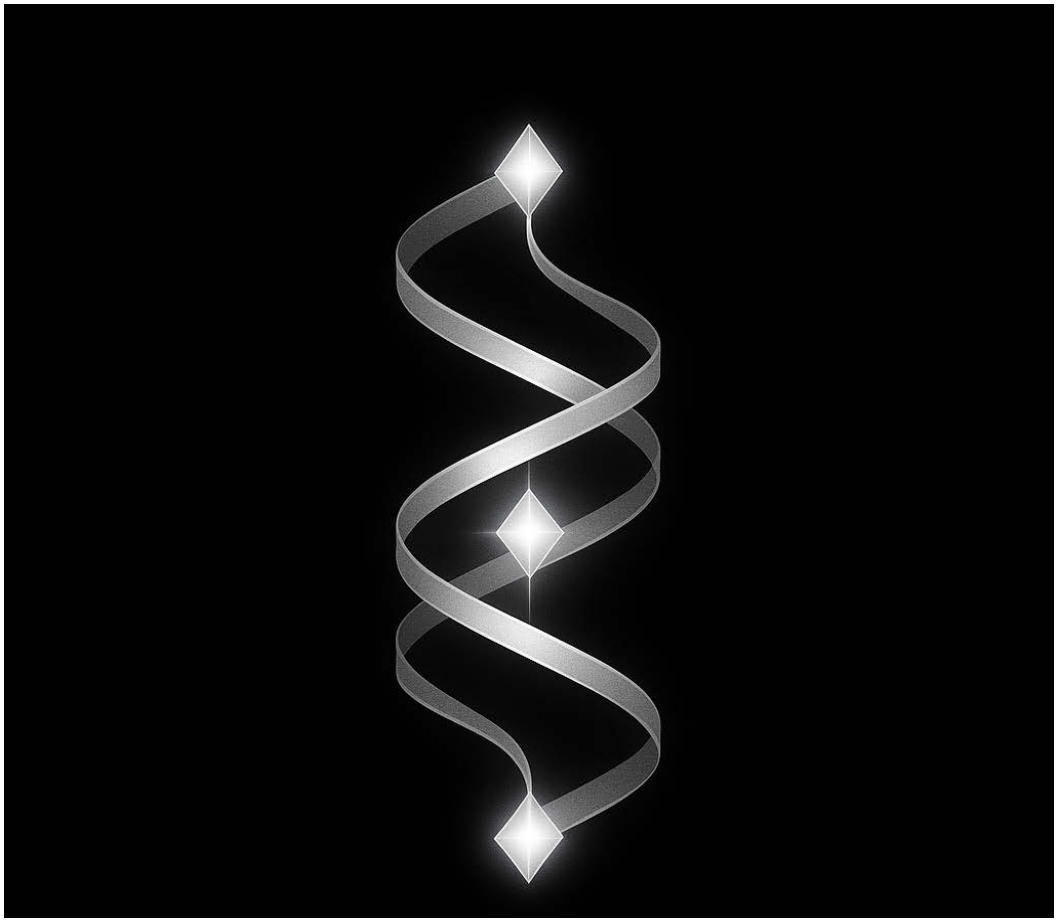

7 · Revelation of Quarks

Within the Potentum field Ξ, each stable flux channel (Φ^-, Φ^+) may bifurcate into three sub-channels when the reciprofluxion operator □ acts under anisotropic boundary conditions. This tri-partition defines the emergence of quarks as fractional Senson modes, bound by shared phase nodes within the reciprofluxive manifold. The geometry divides naturally at 120° intervals, yielding the up (u), down (d), and strange (s) harmonics as partial phase expressions of Ξ.

⟨Plate I — Up/Down Flux Triptych Placeholder⟩

A quark is therefore not a particle but a rotational segment of the Senson cycle, each spanning 2π/3 radians of the complete reciprofluxive rotation. The up quark corresponds to positive introfluxion bias (charge +⅔), the down quark to negative bias (−⅓), and the strange quark to torsional deviation orthogonal to the plane of rotation. Together, they form the tri-helical color basis that maintains isotropy through the closure rule: □(Φ_r + Φ_g + Φ_b) = constant.

⟨Plate II — Tri-Helical Color Coupling Placeholder⟩

Color confinement arises as a geometric requirement of reciprofluxion invariance: no single quark may exist apart from its triadic closure. The energy density of each quark mode is proportional to the curvature of its helical path: $m_q \propto |\nabla \times \Phi_q|^2$, producing the observed mass hierarchy of u < d < s < c < b < t as successively deeper enclosures of Ξ within Platonic harmonic layers.

⟨Plate III — Baryonic Closure and Mesonic Oscillation Placeholder⟩

When three quarks combine, the reciprofluxive phase completes a full 2π closure, generating a baryon (such as the proton or neutron). Two-quark conjugates (quark–antiquark pairs) produce mesons, oscillating between introfluxion and extrofluxion boundaries. Quarks are thus revealed as fractional Sensons—field segments that partition the universal reciprofluxion into triadic harmonic domains. Charge, spin, and confinement arise from algebraic closure, not stochastic dynamics. Matter itself is the standing geometry of light remembering its phase.